250 CASES OF SCARLET FEVER

TREATED IN AN ISOLATION HOSPITAL,

WITH COMMENTS ON THEIR COMPLICATIONS

AND TREATMENT.

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By

HEDLEY BARRY THOMSON.

M.B., Ch.B.

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250 CASES OF SCARLET FEVER TREATED IN AN ISOLATION HOSPITAL, WITH COMMENTS ON THEIR COMPLICATIONS AND TREATMENT.

Any one brought in contact with a large number of cases of Scarlet Fever cannot fail to notice that the public dread of the disease is very widespread.

Certainly this dread is not justified by the mortality, but seems to be partly due to the great variety of the complications which ensue and to the fact that compulsory notification and disinfection, and in many cases compulsory removal to Hospital, is practised.

I have been led to make a close analysis of 250 consecutive cases of Scarlet fever treated in a Country Hospital. These cases were all derived from the country districts and villages of the Wirral Peninsula, Cheshire, excluding the larger places such as Birkenhead and New Brighton.

The following villages supplied the greater number of the cases :

Port Sunlight, which is a model village completely modern, with excellent surroundings and perfect sanitation.

New Ferry, partly modern and partly old, the old portion of which is rather unsanitary.

Bromborough, a country village with healthy surroundings.

Eastham, a country village, surroundings healthy.

Elsmere Port, a village on the canal, in a dirty and unsanitary condition.

Sutton and Little Sutton, country villages with moderately healthy surroundings.

Neston, a country village but old and unsanitary.

Heswall, a country village: the new part is healthy, but the old portion is rather unsanitary.

West Kirby, a country village with healthy surroundings.

Hoylake: surroundings clean and healthy.

Higher Bebington, a country village with healthy surroundings.

The remainder of the cases were derived from quite country districts.

The working classes supplied the greater number of these cases: a very small percentage was drawn from the pauper population, and a very few from the middle classes.

In this district removal to Hospital is insisted on in all cases where isolation cannot be efficiently carried out, or where there is interference with business arrangements, and in cases where the patient cannot get proper attention at home.

On several of the estates in the district, e.g. Port Sunlight, all cases are removed to Hospital whether isolated or not.

This is good both from a Public Health point of view and for the patient's own good, for they are necessarily much better cared for in a well conducted Hospital than in a cottage where skilled nursing and proper sanitation is lacking.

In private practice one experiences considerable difficulty in obtaining a suitable nurse for a case of Scarlet Fever.

Many of the nurses sent from private Nursing Homes to nurse Scarlet Fever cases have really not had a general training at all and have only spent a brief period in some Fever Hospital. Such a person is, of course, unsuitable, for as we know nursing is a most important factor in the successful treatment of Scarlet Fever. On this account therefore we have sent as many cases as possible into Hospital and with very good results, as a tabulated list,

which I have prepared from a close analysis of all the cases, will show.

In watching the progress of cases of Scarlet Fever, one is chiefly struck not by the initial fever but by the great variety of the complications which ensue.

We are also struck by the fact that we can modify, and to a large extent prevent, many of these complications by appropriate treatment.

In short, the successful treatment of Scarlet Fever means the prevention as far as possible and the alleviation of these complications.

In the 250 cases in this series, the chief complications one met with were as follows, and these, for the sake of description, one has divided into two groups :

I. Those associated with the primary scarlatinal infection, and the septic condition of the mouth, throat and naso-pharynx.

II. Those associated with the general infection and absorption.

The former occur in the early stages of the disease and the latter, for the most part, in the later stages.

The conditions one has included under the former are as follows, and one may term them

Local Complications:

1. Ulceration of the Throat { a. Primary. b. Secondary.
2. Adenitis { a. Primary. b. Secondary.
3. Affections of the nasal passages and naso-pharynx.
4. Otitis.
5. Glandular Suppuration and Cellulitis.
6. Mastoiditis.

Under the General Complications one has included the following :

1. Renal Complications { 1. Albumenuria. 2. Nephritis.
2. Cardiac Affections (pericarditis: endocarditis: dilatation).
3. Rheumatism.
4. General septic conditions, Pyaemia, etc.
5. Secondary eruptions.

After a most careful analysis of all the cases one has tabulated the various complications under these headings to illustrate the total and percentage incidence of these complications.

LOCAL COMPLICATIONS

in 250 Cases.

Complication	Number of Cases.	Percentage Incidence.
1. Ulceration of Throat :		
a. Primary	98	39.2
b. Secondary	33	13.2
2. Adenitis { a. Primary	95	38.
2. Adenitis { b. Secondary	46	18.4
3. Affections of Nasal Passages and Naso-pharynx	29	11.6
4. Otitis	27	10.8
5. Glandular Suppuration and Cellulitis	4	1.6
6. Mastoiditis	1	0.4
7. Diphtheria	6	2.4
Death	0	0.

GENERAL COMPLICATIONS

in 250 Cases.

Complication	Number of Cases.	Percentage Incidence.
1. Renal Complications :		
1. Albumenuria	39	15.6
2. Nephritis	5	2.
2. Cardiac Affections :		
1. Endocarditis	3	1.2
2. Pericarditis	1	0.4
3. Rheumatism	10	4.
4. General Septic Conditions :		
1. Pyaemia	1	0.4
2. Erysipelas	2	0.8
5. Rashes, etc. Purpura	3	1.2
Death	0	0.

One may state at this stage that out of the 250 cases treated during this period, no death occurred. A glance at the table will show that in the average case the local complications are brought much more under one's notice than are the general ones whose percentage incidence is not nearly so high.

These local complications, which to a very great extent determine the severity of the attack in any case, are, as has already been stated, due to two factors, viz.

(1) The unhealthy condition of the mouth, throat and naso-pharynx.

(2) The virulence of the scarlatinal infection itself.

The former is more readily controlled than the latter and the term "Oral Sepsis" has been commonly applied to it.

The various agents which cause this condition are carious teeth, unhealthy gums, deposits of tartar and septic materials round the teeth, and enlarged tonsils and adenoids.

One has observed that almost invariably when the local complications are severe some of the conditions producing oral sepsis are well marked, and there does not seem much doubt that a considerable

improvement could be brought about in these conditions if people attended to the hygiene of the mouth and had carious roots extracted, tartar and septic materials removed and tonsils and adenoids appropriately treated. These conditions are more especially seen in the case of children and young people, and it is almost incredible to see the amount of neglect in this respect even among people who really should know better.

Some good, however, is being done in this direction by the Medical Inspection of school children.

The complications brought about by the virulence of the original Scarlatinal infection are not so readily prevented as those caused by oral sepsis, but we can do a great deal even in this direction by careful expectant treatment and by searching carefully for the cause on noticing the slightest rise of temperature after it has been normal for some time.

The complications most frequently seen in this series of 250 cases were undoubtedly the local ones, and of these the Ulceration of the Throat and Adenitis were the most common.

The next in frequency were the affections of the nasal passages, naso-pharynx, and the ear. Happily Cellulitis and suppuration of the cervical

glands were very rarely seen, and only occurred in 1.6 per cent of the cases.

Mastoiditis was still more rare, being seen only once in the series.

Another complication which happily did not occur frequently was Diphtheria.

In six cases there was a definite membrane seen on the fauces and on examination of the throats the Klebs Loeffler Bacillus was found to be present. All these cases also showed well marked rashes with the typical appearance of scarlet fever.

These cases were carefully isolated and antitoxin was administered. All the cases made quite good recoveries.

Naturally in all these complications, the individual cases varied very much in the degrees of severity. In the cases of ulceration of the throat the conditions varied from small spots to large patches, and of course the surroundings were affected in proportion to the severity of the ulceration.

Adenitis varied very greatly from slightly enlarged tender glands, which soon disappeared, to considerable involvement on both sides of the neck and which continued for some considerable time.

The affections of the naso-pharynx and nasal passages and ears also varied very much in the

individual cases. In some cases only a slight discharge was seen, which soon disappeared on treatment, but some cases persisted for a considerable time and prolonged the convalescent stage to a marked degree. In these protracted cases one almost always observed that there was a chronic enlargement of the tonsils and adenoids.

Luckily glandular suppuration and cellulitis did not develop nearly so often as the older statistics would appear to show, for there were only four cases in which the glands suppurated and had to be incised.

With regard to complications of the ear, these are of very great importance as it is a common occurrence, being seen on twenty-seven occasions, i.e. 10.8 per cent of all the cases. It is also of the highest importance, as it may endanger the life and hearing of the patient. Hearing is of paramount importance now in many industries, and many large factories will no longer employ anyone suffering from deafness on account of the great danger to such persons in working amongst machinery.

Otitis is produced by many causes:

(1) Toxins circulating in the blood.

(2) Direct spread from the throat along the Eustachian Tube.

(3) Febrile condition which causes a diminished resistance of the organism as a whole.

There does not seem much doubt that the toxins cause those rapid cases which develop very early, and also those cases which appear after the acute stage has passed.

Infection from the throat by the Eustachian tube occurs especially in cases with enlarged tonsils and adenoids, and in cases with extensive ulceration of the throat.

The febrile condition, of course, lessens the resistance considerably and infection results.

Infection of the middle ear is very serious and one meets with two degrees of inflammation:

(1) Catarrhal
(2) Purulent.

The catarrhal form is generally of a mild nature but the purulent form is always much more severe. If there is much fluid collected in the middle ear one can readily detect the level to which it extends by examining the Membrana Tympani with a speculum. In some cases the fluid may cause bulging of the membrane if in large amount.

If the membrane is not pierced, we soon get perforation and destruction of a considerable part of it.

The discharge is often at first serous, but it soon becomes purulent in character.

Severe earache usually occurs at an early stage and this first draws one's attention to the ear condition. Sometimes, however, no complaint is made and the ear may begin to discharge without apparent pain.

One will do well to make it a routine practice of examining all ears daily in order to begin treatment as soon as possible.

We will discuss the treatment later.

We will now discuss the general and more remote complications, which, as a rule, appeared at a later date than the local ones.

Renal affections were most frequently seen.

The next in order of frequency was rheumatism, then heart complications.

General septic conditions were happily of very rare occurrence, there being only one case of Pyaemia in the whole series.

Two cases showed signs of Erysipelas on admission, but they both made a good recovery.

Purpura was seen in three cases, but it soon disappeared.

In the general, as in the local, complications, the individual cases varied very much in the degree

of severity.

In dealing with the kidney complications, one has, for the sake of convenience in description, made a distinction between Albumenuria and Nephritis. It is difficult to do this by hard and fast rules, but clinically it is convenient to classify the cases according to the presence or absence of blood and casts in the urine.

I therefore speak of cases where only albumen is present in the urine as albumenuria, and when albumen, blood and blood casts are present, as nephritis.

Many look upon the kidney complications as the most important of all. They are certainly very troublesome if they do occur, but one's experience, in this series of cases at any rate, was that the local conditions were brought much more forcibly under one's notice for the incidence of grave kidney complications was extremely small, as nephritis was only seen in five cases, i.e. 2 per cent of the series.

One does not wish for one moment to make light of these complications, for even though the incidence is low, yet if it does occur the results are so grave in the severer cases that all our resources

are taxed in order to save the life of the patient, or in preventing an acute case becoming chronic and thereby shortening the life of the patient.

There is a considerable variation in the severity of the renal complications. One frequently observed cases which showed slight albumenuria in the early stages of the fever: but in all the cases under notice it was of a transient nature when it appeared in the early stages. This form of albumenuria was more particularly seen in cases with Hyperpyrexia. It has commonly been called "febrile" albumenuria, and as a rule it disappeared with the fall of temperature.

The most persistent forms of albumenuria met with occurred in the third and fourth weeks from the onset, and it is evident that it is largely due to the fact that the kidneys are by this time very much overworked by the excretion of the toxins circulating in the blood. One observed that cases showing well marked secondary Adenitis frequently also developed Albumenuria, but this was, as a rule, transient in character and usually yielded soon to appropriate dieting and treatment.

The fact that these two conditions are frequently present at the same time does not necessarily lead

one to suppose that the adenitis in any way causes the albumenuria. It is most likely due to the fact that both are produced by similar conditions, namely, the scarlatinal infection and the toxins circulating in the blood.

From this fact one would suppose that the onset of these complications was not so readily controlled and this is certainly true within limits, for although one recognises that the condition of toxaemia, which is one of the chief causes, is practically beyond our control; yet there are other causes, as well, which we have directly under our control which often set up albumenuria and nephritis. These are careless nursing, namely, (1) Not keeping the cases long enough in bed, and (2) Allowing them to be exposed to sudden changes of temperature.

The irritation produced by the toxaemia would probably not go on to nephritis unless the patient was exposed to a sudden chill.

The additional irritation causes a considerable increase in the congestion and nephritis results.

A striking fact, borne out by observation in these cases, is that the onset of an attack of Acute Nephritis in Scarlet Fever does not necessarily depend on the severity of the original attack. Some-

times it is very sudden in onset and appears almost without warning. In three out of the five cases quoted, which developed Nephritis, the initial symptoms of the fever were not more than ordinarily severe. They showed temperatures ranging from 101° to 103° and had well marked rashes, slight ulceration of the throat, and the cervical glands were moderately swollen, and the temperature lasted from four to six days. Slight traces of albumen were found in the urine on the second, third and fourth days, and one showed a small trace of albumen on the seventh day.

As regards the other two cases, one was a very mild one with slight rash and slight sore throat, very little swelling of the cervical glands, and the temperature ranged from 99° to 102°, for four days. In this case no febrile albumenuria was present.

The other case was more severe and showed a well marked rash and sore throat, and marked swelling of the cervical glands on both sides. The temperature ranged from 100° to 104°, coming down on the seventh day. There were traces of albumen in the urine from the second to the sixth day.

In these five cases, Nephritis varied considerably as regards its time of onset, and it appeared

on the 20th, 25th, 28th, 29th and 31st days of the disease.

Four of the cases were fairly mild, but the fifth was moderately severe.

In all of the cases, however, the course was uneventful and they were discharged on the 72nd, 75th, 79th, 80th and 87th days of the disease.

One reason why patients with mild or moderate attacks develop Nephritis is that they may not be so carefully watched as cases of greater severity. The patients themselves, in mild cases, are very apt to take considerable risks.

There is very little doubt that some mild cases of Scarlet Fever are not diagnosed as such, and consequently not isolated or sent into Hospital. In such cases grave complications may easily ensue, as they get practically no attention at all after the febrile stage is over.

Cardiac Complications :

The incidence of Cardiac complications in this series of cases has been very small.

Endocarditis only occurred in 1.2 per cent of all the cases, and Pericarditis was only observed in one case. From these figures, and from statistics

from other Hospitals, one would gather that the incidence of these complications has been rather overrated.

One always looks upon Scarlet Fever as a common cause of chronic valvular disease of the heart. The toxic effect of Scarlet Fever on the heart seems to be very similar to rheumatism, and it seems to me that cases quoted as due to Scarlet Fever are very often really due to Rheumatism. Certainly in two out of the three cases of Endocarditis quoted in this series, definite indications of Rheumatism were present.

In many cases of Scarlet Fever a soft systolic murmur is heard in the mitral area. This is no doubt caused by the toxins acting on the cardiac muscle and producing some slight dilatation. This condition is commonly observed to be present in many febrile conditions, and is not at all peculiar to Scarlet Fever.

In studying the effect of the toxins of Scarlet Fever on the cardiac mechanism, one is chiefly struck by the tachycardia present even in the mild cases. This condition is most often seen in children, and it frequently persists for some considerable time, even long after the temperature has fallen to normal.

On careful investigation in many of these cases no evidence of dilatation could be discovered, and no murmurs were heard.

This condition may possibly be due to some disturbance to the inhibitory action of the vagus.

As a general rule, the onset of Rheumatism in Scarlet Fever was closely associated with the Scarlatinal infection itself.

The Percentage Incidence of Rheumatism was very small, it being seen in only 4% of the cases. Six of these ten cases which had Rheumatism were of a mild nature, and the remaining four cases were moderately severe.

They all, however, yielded to Anti-rheumatic treatment, which we will discuss later.

General Septic Conditions:

Happily the Incidence of complications of this nature was very small.

Pyaemia was seen in one case, which proved to be most troublesome, making the stay in Hospital much prolonged.

This case, a girl aged 13 years, was admitted on the second day of the fever. There was a well marked rash and all the symptoms of a sharp attack:

Temperature 103.8 : rather severe ulceration of the throat with marked enlargement of the tonsils and a considerable degree of adenitis was present in the cervical glands on both sides.

These local symptoms subsided gradually and about the 17th day the throat again became troublesome. On the 19th day patient complained of severe pain in the right ear, and next day also in the left: on the 21st day both ears began to discharge: on the 25th day the patient complained of severe pain in the right mastoid region, and there was a sharp rise of temperature.

The advisability of an operation was considered and it was decided to await developments, and two days later the temperature came down again. About the 35th day, she complained of pain around the right hip joint and a fluctuating swelling was made out. On aspiration this was found to contain pus. This was incised and drained, and it gradually closed.

Similar conditions arose at varying periods in the right shoulder, elbow and ankle joints. All these abscesses were incised and drained, and finally she made a complete recovery.

Erysipelas was seen in two cases, one in the face and the other in the foot.

The case which had the face lesion was very ill for ten days, but eventually made an excellent recovery. In the other the course of the disease was uneventful.

TREATMENT.

I should like to discuss somewhat briefly the treatment adopted in this series of cases. All the cases were treated in a Hospital, where a good staff of trained nurses was available. The cases for the most part were sent into Hospital as early as possible, in fact, as soon as diagnosed in most cases.

This was, of course, a distinct advantage from the point of view of immediate skilled attention, and from a Public Health standpoint, for the instant removal to a large extent prevented several members of the same family being attacked. The advantages of early removal to a Hospital are more especially seen in dealing with cases drawn from the working classes.

Any one who has had to attend cases of this nature will fully appreciate the difficulties one has to contend with in treating severe cases in a

small cottage, for the patients are not only in a condition of discomfort, but are in positive danger.

There is no doubt that the complications are much more forcibly brought under our notice than are the symptoms of the fever itself, and it is in the early recognition and careful treatment of these complications that the successful treatment of scarlet fever lies.

As regards the treatment of Scarlet Fever, the general rules for treating most fevers hold good.

A good supply of fresh air is, of course, essential, and one should always allow a cubic space of 2000 cubic feet per patient. It is a good rule to strictly observe this, if we wish to have good results.

If one is absolutely forced in emergencies to reduce the cubic space, one should not on any account reduce it below 1500 cubic feet per patient, and this only to be a temporary arrangement according to the urgency of the situation.

The wards should be kept at an equable temperature of 60°, and 5° margin being allowed above and below this.

For Pyrexia, one used various treatment, according to the needs of the case. Cool sponging with

water at 65° to 70° is good and easily applied. The cool pack at 75° to 80° proved very useful, and in some cases the tepid bath at 80° to 90° gave great relief.

These measures not only reduce the pyrexia and give great relief and comfort to a patient, but they also keep the skin active and thus we have a large amount of toxins excreted.

One found that a tepid bath twice a day until the temperature was normal was a great benefit. After this the daily bath kept the skin active. It was also found an advantage at the time of desquamation to occasionally anoint the body with an oily preparation containing olive oil and eucalyptus to which a small amount of thymol has been added.

A most important point, and one strictly observed, was to treat each individual case as infective to another.

This is certainly rather difficult to carry out and cannot be done if at all understaffed. It really involves everything in connection with the patient, - clothes, food and all utensils.

In attending to any patient one should use and see that others also practice asepsis, and deal with each patient in a manner similar to the dressing of

surgical cases.

If these precautions are not used; the Hospital, instead of proving a great benefit, will be a positive danger and mild cases may become infected and then assume the most virulent forms.

A good beverage, largely used to relieve the intense thirst, is Imperial Drink, i.e. water, fresh lemons, cream of tartar and sugar, in suitable proportions.

As regards diet, it has been our practice, and one found it work very well, to keep the patients on strict milk diet until the temperature returned to normal. Then they were allowed milk pudding and bread and butter. The nitrogenous diet was strictly limited for three weeks, no meat or eggs being allowed at this time, but a little fish was occasionally given.

After the third week they returned gradually to ordinary food if there was no contra-indication.

All patients were kept in bed for three weeks as a routine practice. If well enough they then got up and were transferred from the acute to the convalescent wards.

Before being transferred, however, all clothes were disinfected and they had a bath and oil inunction.

The mouth and fauces were irrigated with a mild alkaline antiseptic, described later. No patients were transferred if they showed marked aural or nasal discharge.

After being transferred a daily bath and an occasional inunction with antiseptic oil was given. The nose and fauces were irrigated daily, as before.

In good weather the convalescent patients had as much time in the open air as possible, care, however, being taken to avoid exposure to sudden variations of temperature.

In the convalescent stage they received plenty of good nourishing food.

In the early acute stages, even in mild cases, the nose and fauces were irrigated daily with a weak alkaline solution containing Sodium Bicarbonate, Borax, Thymol, Menthol, Glycerine, Eucalyptol, etc. It is practically identical with the well known proprietary preparation called Glycothymoline.

In the more severe cases, where there was considerable ulceration of the fauces and much nasal discharge, one used the same alkaline solution but less diluted. In severe cases it was used every four hours, and one used every means in one's power to reduce oral sepsis to a minimum.

In many cases one saw very septic mouths resulting from carious teeth, deposits of tartar, etc. These should be removed at once for as long as they are present oral sepsis will remain in spite of any measures. The collections of septic material round the teeth were swabbed away daily with an antiseptic on a plug of wool. Hydrogen peroxide was found very useful in these cases.

If the post nasal sepsis was great as a result of large adenoid growths, we removed them with a Gottstein's curette.

This was found to be an advantage as a large focus of infection was thus removed and one was able to keep the upper air passages more free of septic materials and secretions.

Another form of treatment one found of very great benefit was the use of antiseptic lozenges. After trying many varieties one found that the Formaldehyde ones with or without cocaine were very efficacious. They were easy and pleasant to take, being taken well by quite young children, and they were not expensive.

These lozenges should have a fairly firm base in order not to melt too rapidly.

In the very septic cases one had to exercise a

considerable amount of patience and perseverance before the throat was clean. The nursing in these cases had to be almost constant to get good results.

The treatment here had to be a little more rigorous, and in these cases the foul ulcers on the fauces were touched with strong antiseptics. Pure Izal was found to be very effectual and not very painful.

The mode of application was to take a plug of cotton wool and a little pure Izal and touch the surface of the ulcers once daily until they showed signs of healing. One, of course, used in addition the alkaline Glycerine Thymol Solution, diluted to the required degree, as a nasal and oral douche every four hours.

Hydrogen Peroxide was also found useful as a mouth wash.

Happily toxic cases were not common, and one only saw four such cases in the series. They all made a good recovery.

One used in these cases the antistreptococcus serum of the polyvalent variety. The number of cases so treated was not sufficient to give one reliable statistics, but it appeared to do good. The strictest aseptic precautions must of course be

taken. Fairly large doses were employed, 40 to 60 cubic centimetres being given subcutaneously. It was given as soon as the condition was recognised.

As regards the treatment of Adenitis of the cervical glands, as soon as the slightest swelling of the glands appeared Cataplasma Kaolini (B.P.C.) was applied. This substance contains Kaolin and Glycerine, with small quantities of Boric Acid, Thymol, Peppermint Oil and Methyl Salicylate.

The mode of application is to heat and apply a thick layer of the paste, as hot as can be borne, over the swollen and tender glands. It is then covered with lint and cotton wool, and changed once daily. This substance is similar to the much advertised "Antiphlogistine".

Excellent results were obtained with this treatment, as it was only necessary to incise glands on four occasions out of the 250 cases.

One never incised glands unless fluctuation or evidence of pus formation was present. However, in cases of Cervical Cellulitis, early incision would be necessary.

The Ear Complications:

The treatment of the ear complications of Scarlet fever may be divided into preventative and curative.

The preventive measures are practically the same as the treatment of oral sepsis, for there is no doubt that, if proper measures were taken, before an attack, in regard to carious teeth and chronic conditions of the tonsils and adenoid growths, and other forms of nasal obstruction, there would be less aural and nasal trouble in Scarlet fever.

Early treatment, with the alkaline douches for the nose and throat, previously described, and with the antiseptic oral lozenges, would do much to prevent severe attacks of Otitis in Scarlet fever.

In all cases the ears were examined daily as a routine practice, and if a rise of temperature occurred during the second or third week of the disease, the ears were most carefully examined.

Sometimes pain drew one's attention to the ears, but in young children this is not reliable. On the first onset of symptoms, hot irrigations of antiseptic lotions were used, but if these did not give relief paracentesis was found to be the best treatment.

Antiseptic irrigation was then continued and many antiseptics were tried, one of the best being diluted hydrogen peroxide. It was also used as an instillation.

In the later stages, the well-known Red lotion was found most useful in drying up persistent discharges.

In one case of Pyaemia, noted previously, the primary focus was probably the caries in the Mastoid process.

Swelling in and around joints should be regarded with suspicion and should be aspirated with strict aseptic precautions, and if pus should be discovered, incision and drainage should be the immediate treatment. This was done in this case, and the recovery was good though somewhat protracted.

Renal Complications:

As regards the Renal complications of Scarlet fever, one examined the urine of every patient once every two days as a routine practice. Cases of Albumenuria, without Nephritis, as a rule require little or no treatment and it usually clears up under appropriate diet. The microscope at once decides whether it is due to Nephritis or not.

The form of Nephritis met with in Scarlet fever yields well to appropriate treatment. Since the tubules themselves are not as a rule diseased, the most rational treatment is to lighten the work of the kidneys as much as possible.

Such patients were at once put on a milk diet and free action of the skin encouraged by hot packs and hot cloths to the loins, or by hot baths.

The bowels were kept freely open with salines. As a rule diuretics and renal stimulants were not employed.

In cases of uraemia, dry cupping is employed. Patients were not kept too long on a milk diet after the acute symptoms had subsided, and they were allowed to sit up in blankets after the diet had been increased for about a week. Of course chills were most carefully avoided.

In the convalescent stages Iron and other tonics were employed for the anaemia which resulted.

Heart Complications:

With regard to the treatment of the cases of endocarditis, only three were encountered and these were of a mild nature.

The heart should be frequently examined as a

routine practice, more especially in the cases where Rheumatism is present or suspected. When one discovered the condition, the chief treatment employed in the milder forms was rest in bed, and one did not allow them up too soon and after getting up their exercise was at first greatly restricted and strictly supervised. In two of the cases, however, there was little doubt that Rheumatism was the cause and they yielded to the usual anti-rheumatic treatment of salicylates combined with the alkalies.

Convalescence.

With regard to the convalescence, patients remained in bed in the acute wards for three weeks and then, after bathing and disinfection, they were transferred to the convalescent wards if in a fit condition.

They remained in the convalescent wards for another three weeks and were never discharged in less than six weeks from admission. The shortest stay in Hospital was thirty-one days, and this was a patient who was admitted in the third week of the disease, and the longest stay was ninety-seven days.

There is a Convalescent Home in connection with the Hospital, and 228 cases, i.e. 91.2 per cent of all the cases, were sent there from Hospital. The remaining 22 cases returned to their own homes direct from Hospital.

The stay in the Convalescent Home was two weeks.

The greatest care was exercised in examining cases before sending them to the Convalescent Home. A slight scaliness of the skin was not regarded as nearly so dangerous as the condition of the mucous membranes of the nose, ear and mouth. Chronic enlargement of tonsils and adenoids are very likely infective conditions, and were always looked upon with suspicion.

Of course all clothes, etc. were disinfected before leaving, and all patients received a bath on the day of discharge and dressed in the disinfected clothes.

The satisfactory results shown in these 250 cases proves beyond a doubt the utility of isolation Hospitals in treating Scarlet Fever, especially among the working classes who are always more or less subject to overcrowding.

There is no doubt that had not speedy removal to Hospital been almost universally practised in

the district, many more cases would have occurred. The immediate removal to Hospital lessens the interference to industrial pursuits and to education, for it enables parents to return to work after the houses have been disinfected and the children to school after a short period of quarantine.

That I should choose such an every day subject may appear strange, but my only excuse is that in dealing with this series of cases I have been very much impressed with its great importance both to the patient and to the physician.